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| Use the Van de Walle text and the TN Math Standards to complete this assignment. If other resources are used in addition, please cite with the URL or bibliographic information. |

**Chapter 20 – Developing Geometric Thinking**

1. Define spatial sense. (p. 489)
2. List and describe in your own words the 4 major geometry strands that apply to all grade levels. (p. 489)
3. The van Hiele Levels of Geometric Thinking can help teachers understand developmentally appropriate next steps for their students’ geometry instruction. Level 0 & 1 should be fully developed in elementary school and Level 2 should be started in 5th grade and fully developed by the end of 8th grade. Complete the following table regarding the first three van Hiele Levels.

|  |  |  |
| --- | --- | --- |
| **Level** | **Describe the object and product of thought at this level** | **Describe an activity appropriate for a student at this level.** |
| Level 0: Visualization |  |  |
| Level 1: Analysis |  |  |
| Level 2: Informal Deduction |  |  |

1. Describe the four features of effective early geometry instruction in your own words. (p. 494)
2. How can you help older elementary students (or even those in middle school) who need interventions move from level 0 to 1? (p. 494)
3. How can you help students in 5th grade begin to transition from level 1 to 2? (p. 495)

**SHAPES & PROPERTIES**

Prepare one of the following activities from your text as assigned by your teacher. Make/print one set of materials as described so that you can practice the activity. Be prepared to discuss the activity and do a quick model/demo in class (bring your materials you prepared). Write a description of how your activity helps to do one of the following:

* Sort and classify (activity on page 496)
* Compose and decompose shapes (activities on pages 497-498)
* Describe properties of Two and Three dimensional shapes (activities on pages 500-503)

Activity 20.5 What’s My Shape?

Activity 20.6 Tangram Puzzles

Activity 20.7 Mosaic Puzzle

\*Activity 20.8 Geoboard Copy

\*Activity 20.9 Decomposing on the Geoboard

Activity 20.10 Mystery Definition

Activity 20.11 Triangle Sort

Activity 20.12 Diagonals of Quadrilaterals

\*Use a virtual geoboard such as <https://www.mathlearningcenter.org/web-apps/geoboard/> & take screenshots or use the geoboard recording sheet.

*Add the following information to your notetaker*

7a. My assigned activity is:

7b. Include at least one image of your materials you created and practice you completed. *(remember to bring to class as well*)

7c. Description of importance of your activity (for sorting/classifying; composing/decomposing; or properties):

**TRANSFORMATIONS**

1. Define Line symmetry (p. 509)
2. Use the Illuminations Shape Tool to practice Activity 20.19 Pattern Block Mirror Symmetry. Add a number of blocks onto the workplace and then select the mirror option on the menu. Take a screenshot of your work and insert. <https://illuminations.nctm.org/Activity.aspx?id=3587>

**LOCATION**

1. Locate the TN Kindergarten standard (copy & paste) that describes what students should learn about everyday positional descriptions.
2. What quadrant of the coordinate plane are 5th grade students introduced to? (p. 514) Copy and paste the associated TN Standards.

**VISUALIZATION**

1. Provide a description of visualization. (p. 519)
2. Two-Dimensional Imagery. At first students are thinking about shapes in terms of \_\_\_\_\_\_\_\_\_ so visualization activities will challenge students to… (p. 520)
3. Young students need to be able to think about three-dimensional shapes in terms of … (p. 521).